

UNITED STATES PATENT OFFICE

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TELEVISION SYSTEM

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This invention relates to a television apparatus and process, that is, it is directed to an apparatus and process for the instantaneous transmission of a scene or moving image of an object located at a distance in which the transmission is by electricity.

Heretofore attempts have been made to transmit an image of an object by electricity so that the image of the object will instantaneously appear at a distance. These prior attempts at television have generally embodied an apparatus and method in which each particular elementary area of the image of the object is successively converted into an electrical current, the intensity of which is proportional to the intensity of the light at that particular elementary area; all the elementary areas of the image being covered in that fraction of a second during which the eye will retain a picture, hereafter referred to as the optical period. This is followed by a transmission of such current and a conversion of such current to light corresponding in intensity to the intensities of the light of the individual areas of the original image; the reconversion process likewise being performed within the optical period so that, by a proper coordination of the developed light, an image of the object to be transmitted appears as instantly formed at the receiving end of the apparatus and method.

The time during which the human eye will retain a picture is of such short duration that the conversion of the light shades of the original image of the object to electricity and the reconversion of said electricity to light and the proper coordination of such light must be performed at a very tremendous speed. All prior attempts at television have attempted to employ some mechanically moving part for dissecting the image of the original object during the process of forming an electrical current which varies in intensity in accordance with the light shades of the respective elementary areas of the image. None of these prior attempts at television have proven successful. They have resulted at best in the production of a crude moving silhouette of the object to be transmitted. This has generally been due to the fact that

the mechanically moving parts of the prior apparatus have not been able to travel at the necessary speed requirements with the synchronism required in a television apparatus.

An object of the present invention is to provide a method and apparatus for television, which is adapted to transmit electrically a true moving image in full light shades of the object to be transmitted.

Another object of the present invention is to provide a method and apparatus for television in which the conversion and dissecting of the light shades of the object to be transmitted, to electricity and the reconversion of such electricity to form an image is accomplished in the following manner:

In the process and apparatus of the present invention, light from all portions of the object whose image is to be transmitted, is focused at one time upon a light sensitive plate of a photo-electrical cell to thereby develop an electronic discharge from said plate, in which each portion of the cross section of such electronic discharge will correspond in electrical intensity with the intensity of light imposed on that portion of the sensitive plate from which the electrical discharge originated. Such a discharge is herein termed an electrical image. An electrical shutter is then interposed between said sensitive plate and the anode of the photo-electrical cell, the shutter having a small aperture therein so that there can be received upon said anode at one instant, only the electrons which originate from one elementary area of the light sensitive plate. There is then imposed upon the electrical discharge a plurality of electrical potentials of different frequencies for causing the electrical discharge to bend in two directions, whereby the electrons from each elementary portion of the sensitive plate are successively directed through said shutter, this action taking place so as to completely cover the area of the sensitive plate within the optical period. The scene to be transmitted is thus analyzed or dissected to produce an electrical current or "light" current having variations in intensity in accordance with the light shades of the object to be transmitted and this is accomplished within the optical